

Patent Application Serial No. 10/769,373 -7-
Reply to March 28, 2006 Office Action
Amendment dated June 27, 2006

Docket No. 1232-5269

REMARKS

Reconsideration of the above-identified application in view of the foregoing amendments and following remarks is respectfully requested.

A. Claim Status / Explanation of Amendments

Claims 1, 2, 5-16, 18, and 21 were pending in this application, of which claims 1, 18, and 21 are independent in form. Claim 17 is canceled without prejudice or disclaimer by this paper. Independent claims 1, 18, and 21 are amended to recite "an emission point of the light source section ... located on or near a rotationally symmetric axis of the optical unit." Support for these amendments is found throughout the specification and drawings, as originally filed, specifically Figure 1 and its accompanying text. No new matter is added by these amendments.

Claims 1, 2, 5-7, 10-13, 17, 18, and 21 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Murakami et al., U.S. Patent No. 5,581,605 ("Murakami"). (See Office Action, ¶3, p.2.). Claims 1, 2, 5-18, and 21 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murakami in view of Muys et al., U.S. Pub. No. 2004/0080815 ("Muys"). (See Office Action, ¶5, p.3.). Finally, claim 14 was rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Murakami. (See Office Action, ¶6, p.4.).

Patent Application Serial No. 10/769,373 -8-
Reply to March 28, 2006 Office Action
Amendment dated June 27, 2006

Docket No. 1232-5269

B. Claims 1, 2, 5-18, and 21 are Patentable Over Murakami and Muys et al., Taken Either Alone or in Combination

Applicant respectfully traverses the rejections under 35 U.S.C. §§ 102(b) and 103(a). As explained below, the cited references, taken alone or in combination, fail to disclose each and every claim element.

Amended independent claim 1 recites:

1. An illumination optical system for illuminating an object surface, said illumination optical system comprising

an optical unit that converts a light having a wavelength between 5 and 20 nm from a light source section into an approximately parallel light, and consists of first and second mirrors, each of the first and second mirrors having a reflection surface that is approximately rotationally symmetrical around an optical axis of the optical unit, the first mirror introducing the light from the light source section to the second mirror,

wherein the first mirror has an opening on the optical axis, through which light reflected by the second mirror passes, and

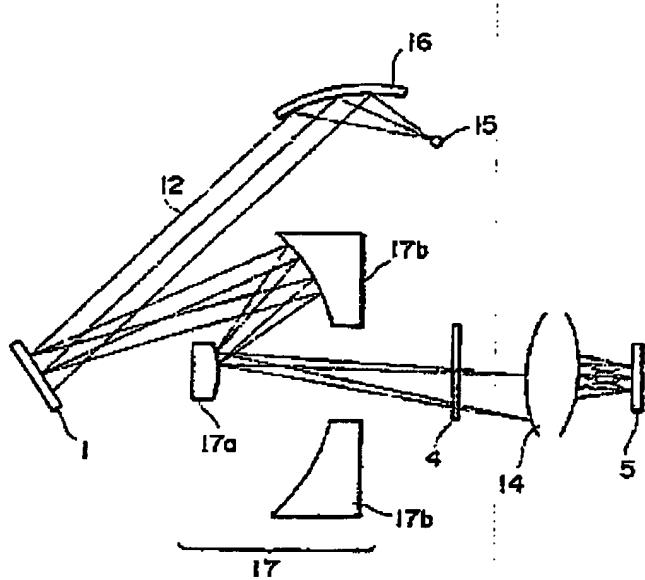
wherein an emission point of the light source section is located on or near a rotationally symmetric axis of the optical unit.

The Office Action alleges that Murakami's light source (15) corresponds to the "light source section" recited in Applicant's claim 1, and that Murakami's two spherical mirrors (17a, 17b) correspond to the "first and second mirrors" recited in Applicant's claim 1.

Patent Application Serial No. 10/769,373 -9-
 Reply to March 28, 2006 Office Action
 Amendment dated June 27, 2006

Docket No. 1232-5269

Murakami's Figure 28 discloses an X-ray optical system "provided with a laser plasma X-ray source 15 as the X-ray source, a parabolic surface mirror 16 reflecting X-rays emitted from the X-ray source 15 to supply a beam of nearly parallel rays, an X-ray-reflecting optical element 1 functioning as secondary X-ray sources, a Schwarzschild mirror 17, a mask 4 and a reduction projection optical system 14, by which a demagnified image of a pattern formed on the mask 4 is formed on a wafer 5." (Murakami, col. 17, ll. 41-49). Furthermore, the Schwarzschild mirror 17 is an optical system composed of two spherical mirrors 17a, 17b having a common center where the spherical mirror (convex mirror) 17a is disposed near the optical axis of Schwarzschild mirror 17. (Murakami, col. 20, ll. 23-32 & Fig. 28).

Fig.28

According to Murakami, "the spherical mirror (convex mirror) 17a is disposed on the optical axis of Schwarzschild mirror 17, [where] the direction of

Patent Application Serial No. 10/769,373 -10-
Reply to March 28, 2006 Office Action
Amendment dated June 27, 2006

Docket No. 1232-5269

principal rays of reflected light by the X-ray optical element 1 is inclined at about 10° relative to the optical axis of Schwarzschild mirror 17.” (Murakami, col. 20, ll. 28-32 & Fig. 28) (emphasis added). Thus, as illustrated in Figure 28, Murakami’s light source (15) is not on or near the rotationally symmetric axes of the mirrors 17a and 17b. Therefore, Murakami fails to teach, disclose or suggest “an emission point of the light source section is located on or near a rotationally symmetric axis of the optical unit” as recited in Applicant’s claim 1.

Muys is directed to a lens for laser cutting devices with improved heat transfer properties. (Muys Abstract). The office action does not allege that Muys discloses “an emission point of the light source section is located on or near a rotationally symmetric axis of the optical unit” as recited in Applicant’s claim 1. Applicant has reviewed Muys and respectfully submits that the reference does not teach, disclose or suggest “an emission point of the light source section [] located on or near a rotationally symmetric axis of the optical unit,” as recited in Applicant’s claim 1.

Accordingly, Applicant submits that amended independent claim 1 is patentably distinct from Murakami alone or in combination with Muys. Accordingly, Applicant’s independent claim 1 and dependent claims 2, 5-16, which depend directly or indirectly from claim 1, are patentably distinct from Murakami and Muys. For at least similar reasons, independent claims 18 and 21 also are patentably distinct from Murakami. Withdrawal of these rejections is requested.

Patent Application Serial No. 10/769,373 -11-
Reply to March 28, 2006 Office Action
Amendment dated June 27, 2006

Docket No. 1232-5269

Applicant has chosen in the interest of expediting prosecution of this patent application to distinguish the cited documents from the pending claims as set forth above. These statements should not be regarded in any way as admissions that the cited documents are, in fact, prior art.

Finally, Applicant has not specifically addressed the rejections of the dependent claims. Applicant respectfully submits that the independent claims, from which they depend, are in condition for allowance as set forth above. Accordingly, the dependent claims also are in condition for allowance. Applicant, however, reserves the right to address such rejections of the dependent claims in the future as appropriate.

CONCLUSION

For the above-stated reasons, this application is respectfully asserted to be in condition for allowance. An early and favorable examination on the merits is requested. In the event that a telephone conference would facilitate the examination of this application in any way, the Examiner is invited to contact the undersigned at the number provided.

Patent Application Serial No. 10/769,373 -12-
Reply to March 28, 2006 Office Action
Amendment dated June 27, 2006

Docket No. 1232-5269

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 1232-5269.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. 13-4500, Order No. 1232-5269.

Respectfully submitted,
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